1.6.8 Embodied Energy of Column and Beam Assemblies in the U.S.

Column Type	Beam Type	Embodied Energy (MMBtu SF) (1)	CO2 Equivalent Emissions (lbs/SF)
Concrete	Concrete	0.13	20.17
Concrete	Steel I-beam	0.09	11.42
Hollow structural steel	Glulam	0.02	1.68
Hollow structural steel	Structural composite lumber	0.02	2.38
Glulam	Glulam	0.03	2.64
Glulam	Structural composite lumber	0.03	1.92
Steel I-beam	Steel I-beam	0.09	8.19
Steel I-beam	Structural composite lumber	0.02	1.64
Built-up softwood	Glulam	0.03	2.41
Built-up softwood	Structural composite lumber	0.02	1.7

Note(s): Assumptions: Values are general estimations for the U.S. 60 year building lifetime. Low rise building. Bay size: 30 by 30 feet. Column Height: 10 feet. 1) Embodied Energy: Energy use includes extraction, processing, transportation, construction, and disposal of each material. 2) Weighted Resource Use: The weight of raw materials used in extraction, processing, transportation, construction and disposal of each material.

Source(s): Athena Institute, Athena EcoCalculator for Assemblies v.2.3, 2007, Available at www.athenasmi.org/tools/ecoCalculator/index.html.